

and a second end; the first end of said lyophobic moiety chemically coupled to a first lyophilic head group; and the second end of said lyophobic moiety chemically coupled to a second lyophilic head group.

7. The micelle of claim 6 wherein the lyophilic head groups of the bola amphiphile are different.
8. The micelle of claim 6 wherein the core of the micelle is lyophilic.
9. The micelle of claim 6 wherein the one or more bola amphiphiles comprising the micelle are capable of hydrogen bonding.
10. A self assembled solid packed micelle comprising: at least one bola amphiphile in which one of the lyophilic head groups of the bola amphiphile is at the center of the micelle.
11. The micelle as in claim 10, further comprising a composition chosen from the group consisting of: pharmaceuticals, chemotherapeutics, immunosuppressants, antifungals, antibacterials, growth factors, vaccines, tissue/cell culture factors, and antibiotics.
12. The micelle as in claim 10, further comprising a material chosen from the consisting of: carbon nanotubes, colloidal metals, conductive polymers, magnetic colloids, and semiconductors.
13. A method of making a self assembled micelle from bola amphiphile with a lyophobic moiety capable of hydrogen bonding comprising the step of: making a first solution of a suitable bola-amphiphile in a charged ionic form; mixing the first solution with a second composition which changes the pH of the first solution towards a neutral pH; and reacting the first and second solutions until a gel forms.
14. A method encapsulating a therapeutic treatment comprising: providing a therapeutic agent; exposing said therapeutic to a bola amphiphile capable of self assembly; and initiating self assembly.

15. A method of treating a patient with a therapeutic agent encapsulated in a self assembled bola amphiphile comprising: identifying a site on a patient in need of a treatment; and administering an effective amount of the bola amphiphile encapsulated therapeutic agent to said site in need thereof.
16. A method of encapsulating a nanotube comprising: forming a nanotube; exposing said nanotube to a bola amphiphile capable of self assembly, and initiating self assembly of said bola amphiphile.
17. A bola amphiphile composition comprising: a hydrophobic moiety capable of hydrogen bonding and having a first end and a second end; the first end of said hydrophobic moiety chemically coupled to a first hydrophilic head group; and the second end of said hydrophobic moiety chemically coupled to a second hydrophilic head group.
18. The bola amphiphile of claim 17 wherein the first and second hydrophilic head groups are the same.
19. The bola amphiphile as in claim 17 or 18, wherein said hydrophilic head groups are peptides.
20. The composition of claim 19 wherein the amino acids comprising the peptide have at least three non-peptide bond forming amine or acid moieties.
21. The bola amphiphile as in claim 17 or 18, wherein said hydrophilic head groups are chosen from the group consisting of: oligo(ethylene glycol) chains, cyclic oligo(ethylene glycols), hydroxyl functionalities, amino or carboxylic acid groups, 4'-amino-4-biphenyl carboxylic acids, naturally occurring amino acids, and aminobenzoic acids.
22. A self assembled micelle comprising: at least one bola amphiphile, said bola amphiphile having a hydrophobic moiety capable of hydrogen bonding and having a first end and a second end; the first end of said hydrophobic moiety chemically coupled to a first

hydrophilic head group; and the second end of said hydrophobic moiety chemically coupled to a second hydrophilic head group.

23. The micelle of claim 22 wherein the hydrophilic head groups of the bola amphiphile are different.

24. The micelle of claim 22 wherein the core of the micelle is hydrophilic.

25. The micelle of claim 22 wherein the one or more bola amphiphiles comprising the micelle are capable of hydrogen bonding.

26. A self assembled solid packed micelle comprising: at least one bola amphiphile in which one of the hydrophilic head groups of the bola amphiphile is at the center of the micelle.

27. The micelle as in claim 26, further comprising a composition chosen from the group consisting of: pharmaceuticals, chemotherapeutics, immunosuppressants, antifungals, antibacterials, growth factors, vaccines, tissue/cell culture factors, and antibiotics.

28. The micelle as in claim 26, further comprising a material chosen from the consisting of: carbon nanotubes, colloidal metals, conductive polymers, magnetic colloids, and semiconductors.

29. A method of making a self assembled micelle from bola amphiphile with a hydrophobic moiety capable of hydrogen bonding comprising the step of: making a first solution of a suitable bola-amphiphile in a charged ionic form; mixing the first solution with a second composition which changes the pH of the first solution towards a neutral pH; and reacting the first and second solutions until a gel forms.

30. A method encapsulating a therapeutic treatment comprising: providing a therapeutic agent; exposing said therapeutic to a bola amphiphile capable of self assembly; and initiating self assembly.

31. A method of treating a patient with a therapeutic agent encapsulated in a self assembled bola amphiphile comprising: identifying a site on a patient in need of a treatment; and administering an effective amount of the bola amphiphile encapsulated therapeutic agent to said site in need thereof.

32. A method of encapsulating a nanotube comprising: forming a nanotube; exposing said nanotube to a bola amphiphile capable of self assembly, and initiating self assembly of said bola amphiphile.

33. The micelle as in claim 6, further comprising a composition chosen from the group consisting of: pharmaceuticals, chemotherapeutics, immunosuppressants, antifungals, antibacterials, growth factors, vaccines, tissue/cell culture factors, and antibiotics.

34. The micelle as in claim 6, further comprising a material chosen from the consisting of: carbon nanotubes, colloidal metals, conductive polymers, magnetic colloids, and semiconductors.

35. The micelle as in claim 22, further comprising a composition chosen from the group consisting of: pharmaceuticals, chemotherapeutics, immunosuppressants, antifungals, antibacterials, growth factors, vaccines, tissue/cell culture factors, and antibiotics.

36. The micelle as in claim 22, further comprising a material chosen from the consisting of: carbon nanotubes, colloidal metals, conductive polymers, magnetic colloids, and semiconductors.